

AR 226 - 1389



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PERSONAL AND CONFIDENTIAL

July 16, 1981

TO: DR. Y. L. POWER - PPD, Parkersburg
FROM: S. S. STAFFORD *S.S. Stafford*

ANALYSIS OF BLOOD SAMPLES FOR PERFLUOROOCTANOATE
(Job No. 810-578; PRAL Nos. 81-2218-2232, 81-2600-2604, 81-2758;
Notebook Nos. E22514, E26238)

As requested in your letters of 5/18 and 6/12/81 to L. J. Papa, the 21 blood samples submitted then have been analyzed for perfluorooctanoate (C₈). Results and sample identification are given in the attached table.

As noted there, the analyses were done using a gas chromatographic method specific for C₈ (Lab Method Number ES-567) but results have been reported as ppm F. for comparison with total organic fluorine analyses. Precision is $\pm 10\%$ relative standard deviation over most of the concentration range, somewhat less at the lowest values. The lower limit for quantitation is 0.007 ppm F (0.01 ppm perfluorooctanoic acid), with a detection limit of ~ 0.004 ppm which can be distinguished from the reagent background but not well quantitated.

Please contact me (772-4440) or L. J. Papa (772-2745) if you have any questions regarding the analyses. General questions on blood sampling can be directed to J. W. Raines or L. F. Percival.

Attachment
jah

Key Words:

Perfluorooctanoic Acid
Perfluorooctanoate
Blood Analysis
GC

000169

EID713276

TABLE I

CONCENTRATION OF PERFLUOROOCCTANOATE IN BLOOD (a)

Sample				GC Analysis (1)	
PRAL No.	Date Sampled	P.R.No.	Name	Date Analyzed	[C ₈], $\mu\text{g F/g blo.}$
81-2218	4/29/81			6/12/81	0.034
81-2219	4/29/81			6/12/81	0.009
81-2220	4/30/81			6/12/81	0.76
81-2221	4/30/81			6/12/81	0.098
81-2222	5/1/81			6/12/81	0.64
81-2223	5/1/81			6/12/81	0.031
81-2224	5/1/81			6/11/81	0.17
81-2225	5/4/81			6/11/81	3.9
81-2226	5/7/81			6/11/81	4.8
81-2227	5/8/81			6/11/81	0.045
81-2228	5/11/81			6/8/81	0.042
81-2229	5/14/81			6/8/81	0.095
81-2230	5/14/81			6/8/81 & 6/9/81	0.25
81-2231	5/14/81			6/8/81	0.31
81-2232	4/30/81			6/8/81	1.3
81-2600	5/19/81			6/17/81	2.1
81-2601	5/19/81			6/17/81	0.019
81-2602	5/26/81			6/15/81	0.012
81-2603	5/28/81			6/17/81	0.057
81-2604	6/1/81			6/17/81	0.75
81-2758	6/19/81			6/26/81	0.095

(a) Analysis is described in Lab Method ES-567 ("Determination of Perfluorooctanoic Acid in Blood, Gas Chromatographic Method", S. Stafford, 4/3/81), using the packed column GC analysis with perfluoro-n-octanoic acid as calibration standard.

(b) Although the analysis is specifically for perfluorooctanoate (acid or salts), concentrations are given in ppm fluorine for comparison with the results of total organic fluorine analyses. ($\text{ppm F} = 0.688 \times \text{ppm perfluorooctanoic acid}$) Estimated uncertainty is $\pm 10\%$ relative standard deviation. The lower limit for quantitation is $0.007 \mu\text{gF/g}$. The detection limit is $\sim 0.004 \mu\text{gF/g}$, but concentrations in that range cannot be well quantitated and are reported as < 0.007 . None detected (n.d.) is reported for samples with $[\text{C}_8] \lesssim 0.004 \text{ ppm}$, which cannot be distinguished from reagent background.

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